Responsiveness Summary

Final Draft Remedial Investigation Report
Kalispell Pole & Timber Facility, Reliance Refinery Facility, and Yale Oil Corporation Facility (Collectively Known as "KRY Site")

It is the intent of the Department of Environmental Quality (DEQ) that the citizens of Montana, and especially residents living near Superfund sites, have the opportunity to be actively involved in the DEQ decision-making process with respect to state Superfund sites. Thus, DEQ solicited public comment on the January 2007 Final Draft Remedial Investigation Report (RI) for the KRY Site in Kalispell, Montana during a public comment period that ran from January 31, 2007 through March 1, 2007. DEQ also held a public meeting in Kalispell on February 20, 2007. The following are DEQ's responses to the written comments from the public submitted during the public comment period for the RI. All comments are presented verbatim in the summary.

Site Background

The Kalispell Pole & Timber (KPT) Facility, partially owned by the BNSF Railway Company (BNSF), is an inactive wood-treating facility that operated for about 45 years until 1990. Portions of the KPT facility are currently occupied by a sawmill operation and a rock-cutting operation. The Reliance Refinery (Reliance) Facility includes an inactive oil refinery that operated for about 40 years until the 1960s. The facility is partially owned by the state of Montana, administered by the Montana Department of Natural Resources and Conservation (DNRC), and is currently vacant. The Yale Oil Corporation (Yale) Facility also operated for about 40 years until 1978 as a petroleum bulk plant and product refinery and is currently occupied by a large retail store. The facility was previously owned by the Exxon Corporation. The three facilities are collectively referred to as the KRY Site.

These three facilities and their associated contamination are listed on the state's superfund list, pursuant to the requirements of state superfund law (CECRA). Cleanup of the contamination is regulated by DEQ under CECRA. DEQ identified potentially liable persons (PLPs) and has a lawsuit pending against BNSF, the Kalispell Pole and Timber Company, Klingler Lumber Company, and Montana Mokko. DEQ has settled the lawsuit with DNRC, Swank Enterprises, and Exxon Mobil Corporation.

Preliminary investigations of the KPT and Reliance facilities have been completed by the U.S. Environmental Protection Agency, DEQ's predecessor state agency the Department of Health and Environmental Sciences, and some of the property owners. As DEQ consolidated and reviewed this data, it identified data gaps in the preliminary investigations and identified additional work needed to determine the magnitude and extent of contamination at the KRY Site. DEQ conducted this additional work and the findings are presented in the RI.

RI Background

The KRY Site occupies an area of approximately 55 acres located in the Evergreen area of Kalispell, Montana. The three facilities that make up the site are relatively close to each other and are located next to the Stillwater River and nearby homes.

DEQ conducted the RI to (1) identify sources of contamination, (2) determine the extent of contamination in soils, groundwater, surface water, and sediment, (3) collect data necessary to determine risks to human health and the environment; and (4) collect site-specific data necessary to develop and evaluate cleanup options. Groundwater, surface soil, subsurface soil, surface water, and sediment were sampled during the RI. The RI was prepared by Tetra Tech EM Inc. (TTEMI) for DEQ.

Groundwater and soils at the site are contaminated with semi-volatile organic compounds (SVOCs) including pentachlorophenol (PCP), polycyclic aromatic hydrocarbons (PAHs), dioxins/furans, volatile organic compounds (VOCs), petroleum hydrocarbons, and metals, most notably lead. The presence of PCP and dioxins/furans (above background) is mostly due to wood-treating operations that occurred at the site, since dioxins/furans are a byproduct of the manufacturing of PCP. PAHs, VOCs, petroleum hydrocarbons, and metals are present due to wood-treating, refining and petroleum-storage activities that occurred at the site.

Current Facility Activities

Five nearby residential wells were sampled quarterly for one year because low-levels of PCP were found in the wells during the RI. To ensure that drinking water standards are met, DEQ will continue to sample these wells on a semi-annual basis. Consultants for BNSF continue to sample groundwater twice per year at some wells within the KRY Site. BNSF's consultants are also operating an ozonation system that was installed to treat shallow groundwater contamination as it leaves BNSF property at the KPT Facility.

Responsiveness Summary

The following comments were submitted to DEQ in writing by The RETEC Group (RETEC), BNSF's consultants. No other comments were received during the public comment period.

1. <u>General Comment</u>*: The remedial actions completed at the KPT site should be included in the Conclusion section as the Yale soil excavation was included on page 6-1. The information on the remedial actions is provided below.*

   In 1996, an air sparging system was installed in the KPT source area and downgradient of the source area to treat the LNAPL plume.

   A pilot ozone system was installed at the KPT site in July 1999 with about 10 injection points and was operated intermittently until early 2003 when it was shut down during design of the full scale ozone system which was installed in September 2004. The system had about thirty injection points during startup. In the third quarter of 2006, 10 new injection points were added to the system.

   The average concentration of PCP during startup of the ozone system in Oct 2004 was 261.2 µg/L and the average concentration of PCP in October 2006 was 26.81 µg/L. This results in an average PCP reduction of 89.7%. At system startup, the average LNAPL thickness in five wells was 3.6 inches. In October, 2006, the average thickness was 0.16 inches resulting in an average thickness reduction of 96%.

A soil removal action was conducted in April 1999 and 660 tons of PCP-impacted soils were excavated and disposed offsite.

In addition, several belt skimmers have removed LNAPL from wells on the KPT property in the past and six wells currently contain absorbent socks for removing LNAPL.

Figure 1 shows time series graphs of PCP concentrations on a groundwater potentiometric surface map. The figure shows 9 wells with PCP concentrations decreasing one, and sometimes two orders of magnitude, for the period of record (1991-2006). Five of the wells on the figure (KPT-5, KPT-16, GWRR-2, GWY-12, and GWY-14) show concentrations below the Montana Circular DEQ-7 Groundwater Standard of 1 ug/L. The startup of the pilot and full scale ozone systems are illustrated on the graphs by vertical lines. These data should be considered in the RI because they would directly affect the technology evaluation in the FS. In other words, the success of the existing ozone system according to existing performance data indicates it would be a promising technology for consideration in the FS for groundwater PCP and LNAPL treatment.

Response: The sentence regarding the soil removal action at the Yale facility was included as an explanation of why Yale is considered to have minor source concentrations compared to the KPT and Reliance facilities. DEQ does not believe it is appropriate to include a list of interim actions for the KPT facility in the conclusions section because they are discussed elsewhere in the document (see Section 1.4.1). The sentence regarding the soil removal at Yale will be removed from the section.

DEQ received the effectiveness evaluation for the ozonation system referenced in this comment, evaluated this information for utilization in the screening of alternatives for the Feasibility Study, and has included chemical oxidation as a component in the Proposed Plan.

EXECUTIVE SUMMARY COMMENTS

1. *ES-1, Third paragraph. This paragraph states that the purpose of the RI was to collect data to prepare baseline risks to human health and the environment but MDEQ stated in the February 5 FS scoping meeting that a risk analysis will be conducted. MDEQ explained that the risk analysis would compare exposure point concentrations to risk-based cleanup levels. MDEQ should provide further detail in the RI as to what the risk analysis will include.*

Response: The objectives of the RI are unchanged, although DEQ has revised some components of the original scope of work, which called for preparation of a baseline risk assessment. Due to shortages of both time and budget, DEQ chose to prepare a risk analysis instead of a risk assessment and never stated that it planned to calculate exposure point concentrations. DEQ's risk analysis includes calculation of site-specific cleanup numbers that are based on cumulative risk rather than forward-calculating risk as would be done in a risk assessment. DEQ used these cleanup numbers to determine areas of the KRY Site that require cleanup. DEQ determined that a risk analysis would be adequate for the KRY Site, which is consistent with what has been done at other CECRA facilities.

2. *ES-2, Fifth Full Paragraph. The hydrogeologic site conceptual model should be revised as the clay unit particularly below Reliance and Yale appears to perch groundwater and as such may represent a separate hydrostratigraphic unit above the unconfined aquifer. This has implications on definition of groundwater flow and calculation of vertical gradients that arise in this RI, along with contaminant distribution and transport.*

Response: Perching relates to accumulation of water atop low-permeability units in the vadose zone such that a locally saturated lens forms even though there is unsaturated material below. Site characterization activities conducted during the RI did not provide sufficient evidence to conclude that perched groundwater occurs in the mentioned areas. Please see responses to subsequent comments regarding this issue.

3. *ES-3, 5th Paragraph states the COPC selection process. This text is repeated several (8) times in the ES. Also, many compounds are carried through as COPCs that are potential laboratory artifacts (e.g. bis (2-ethylhexyl) phthalate, methylene chloride, acetone). In addition, certain metals species are carried through as COPCs that may be attributable as background (i.e. iron, manganese), its not clear if background concentrations were considered for these constituents.*

Response: The COPC selection process is discussed in detail in the first paragraph under "Nature and Extent of Contamination" on page ES-3. Other places throughout the Executive Summary that discuss the process are simply to point out the different reasons that certain COPCs were retained for each medium. However, DEQ believes that the subsequent discussions are slightly repetitive and will remove them, leaving only the discussions regarding the specific COPCs retained for each media.

DEQ cannot screen out the listed compounds as laboratory artifacts without evidence to support that conclusion and the validation process did not identify them as laboratory contaminants (see Appendix H). Bis(2-ethylhexyl)phthalate is typically found in petroleum contamination and DEQ does not believe it was introduced by the laboratory. Additionally, acetone is one of the compounds that DEQ was concerned might be created as a byproduct of operation of the ozonation system. Specific quality assurance issues with regard to acetone are discussed on page 2-21 within Section 2.7.3.1 of the RI, which is specific to the field quality control samples.

Background concentrations were taken into consideration for a number of compounds in various media, as is pointed out in the discussion of the COPC selection process referred to in an earlier comment. Additionally, a specific discussion of the background concentrations of metals in groundwater is provided on page ES-6, in surface soil on page ES-8, and in subsurface soil on page ES-9, as well as in various portions of the RI text for the various media.

4. *ES-4, 1st Partial Paragraph. Dioxins are considered COPCs in surface water. Further evaluation of dioxins indicates they are present throughout the reach in surface water without a significant change in concentration. This suggests that they are largely ubiquitous*

in surface water and likely reflect background conditions. Further, if a source was linked to KRY, it may be expected that dioxins and furans would be present in sediment, but are not. Carrying dioxins forward as surface water COPCs related to KRY should be re-considered.

Response: Dioxins/furans were considered COPCs in surface water because they exceeded Montana numeric water quality standards for surface water and because the concentrations increase above the background sample throughout the reach adjacent to the KRY Site. DEQ previously explained to RETEC that based on the limited number of samples, any increase in concentrations above background throughout the reach is significant and could not be ignored. The background sample resulted in a dioxins/furans concentration (reported as a toxicity equivalence (TEQ) using World Health Organization (WHO) 1998 factors) of 5.83 picograms per liter (pg/L). Subsequent sample locations throughout the reach increased to 6.65 pg/L and 11.45 pg/L (8.09 pg/L duplicate). DEQ also collected sediment samples and had them analyzed for dioxins/furans, including a background. There were no exceedences of the background sediment sample.

DEQ approached BNSF/RETEC about this information and asked for input on how to move forward since making decisions about cleanup of the Stillwater River based on such a limited number of samples was problematic. DEQ did not receive any meaningful input from BNSF/RETEC. DEQ received recommendations from its consultant for additional sampling necessary to determine whether or not cleanup should be conducted on the Stillwater River surface water and sediments as part of the cleanup for the KRY Site. Based on that subsequent sampling, which is discussed in the Addendum to the FS, dioxins/furans are not retained as a contaminant of concern for surface water.

5. *ES-5 2nd Paragraph discusses the Seaman Shelton Site. Is this part of the intended RI? Also, this site location is not shown on the figures. The site does not have the same COPCs as the KRY site and should not be carried forward in the RI.*

Response: The paragraph referred to in the comment discusses the location of the Seaman Shelton Site. It is located near Northern Energy Propane southwest of Wal-Mart. This area is depicted on nearly every figure included in the RI. RETEC has routinely sampled or collected depth to water information from at least one well (PW-1) on the Seaman Shelton Site in its semi-annual sampling event and has routinely detected PCP. For this reason, DEQ sampled PW-1 and other wells associated with the Seaman Shelton Site and installed additional wells (one shallow and one deep) downgradient of the Seaman Shelton Site (in the Wal-Mart parking lot) to determine the downgradient extent of contamination associated with the KRY Site. The Seaman Shelton Site is a DEQ Petroleum Technical Section site and DEQ was able to determine that the petroleum contamination associated with it is separate from that of the KRY Site. However, DEQ believes the PCP is associated with the KRY Site. Throughout the document there are references to Seaman Shelton, as useful data was collected there. However, it is always stated that the petroleum contamination at the Seaman Shelton Site is not related to the KRY Site.

6. *ES-10 1st Paragraph of RI Conclusions and Recommendations. The RI points out that there are three primary sources of contamination KPT, Reliance, and Yale. However, very little is*

discussed about impacts from Yale and discussion largely defers to Seaman Shelton instead, which should not fall into the RI scope. It would be helpful for the RI conclusions to concisely identify for each KPT, Reliance, and Yale the following:

- *Identified COPCs by source (Nature)*
- *Distribution of COPCs be media (Extent)*

This allows characterization of each source for consideration in the RA and FS phases as COPCs and their distribution by media vary spatially across the study area and are subject to a range of exposure scenarios and remedial alternatives.

For example, during the public meeting on February 20, 2007, in Kalispell, MDEQ presented some conclusions from the RI report, one of which was the different nature of the LNAPL from the KPT property to the Reliance property (lighter diesel to a heavier more viscous LNAPL, respectively). Other conclusions can also be made from the RI data, such as:

> *The Total VPH in soil are not present on the KPT and Klingler Lumber properties but present in low amount on the Reliance property. Total EPH in soil are found across all three properties. PCP is present in surface and subsurface soil across much of the KPT property with highest concentrations coinciding with the LNAPL smear zone. On the Klingler Lumber property, there were low levels of PCP in surface soil and in subsurface soil in the southern part of the property. PCP is present mainly present above industrial PRGs in the surface and subsurface soil on the western and southern portions of the Reliance property. Dioxin concentrations above industrial PRGs are mainly found on the KPT property with some exceedances in subsurface soil on the Reliance property. Surface soil dioxin industrial exceedances appear to be fairly widespread on the KPT property and limited in extent on the Reliance property. Lead occurs at background levels on the KPT property and at higher detections on the Reliance property. This type of interpretation could be done on all the compounds that drive the cleanup to help the reader understand the nature and extent of contamination across this site. The site is complex and the current description in the Conclusion does not take into consideration all of the soil and groundwater data that were collected during the RI.*

This analysis and a more detailed explanation of the site conceptual model will help with the FS analysis, i.e., the remedies can become specific to the chemicals and media in which they are found. Thus, the better understanding of the nature and extent of contamination aids in remedial action evaluation.

Response: This paragraph identifies that there are three primary sources of contamination: KPT, Reliance and Yale. It briefly mentions a fourth, off-site source area, which is the Seaman Shelton Site, but none of the source areas are discussed in detail. The subsequent text of the Executive Summary also does not go into any detail about the Seaman Shelton Site. As discussed in an earlier comment response, the RI does include some limited discussion of the Seaman Shelton Site, as DEQ's RI collected data from wells within this site. Throughout the document it is discussed that the Seaman Shelton Site is a separate site from the KRY Site and any discussion regarding the Seaman Shelton Site is limited to its applicability to the KRY Site. The RI does state that Yale is a lesser source area than either of the KPT or

Reliance facilities, but that is simply due to the level of cleanup undertaken at Yale in comparison to the other two facilities. A large-scale soil excavation and thermal desorption was conducted at Yale which removed virtually all of the contaminated soil, and therefore the source material. DEQ sampled both water and soils in the vicinity of the Yale facility and was able to determine that the facility is not impacting its surroundings to the extent that KPT and Reliance are impacting the area. Discussions throughout the RI discuss this same phenomenon, and in no way defer to discussions about the Seaman Shelton Site.

The Executive Summary is a brief synopsis of the entire RI and its discussions and conclusions are not nearly as in depth as those within the document itself. That being said, the type of discussion proposed in RETEC's comment (i.e., identification of COPCs by source and distribution of COPCs) is inappropriate given that DEQ is not attempting to distinguish between contaminants associated with the separate facilities. DEQ believes that the RI has characterized the contamination adequately, with a few exceptions which are outlined in the recommendations section of the document. DEQ disagrees with RETEC on the range of exposure scenarios that are applicable to the KRY Site, although DEQ does agree that there are numerous remedial alternatives applicable to the KRY Site which DEQ took into account during the FS.

DEQ has determined the location of chemicals that will drive the cleanup and where they occur on the KRY Site above screening levels. DEQ believes that its description is adequate for determination of nature and extent of contaminants and for screening of remedial alternatives. DEQ did not ignore any data collected in the RI and feels that the conclusions drawn in the document are valid and based on the data collected. Lastly, DEQ believes that it has evaluated all of the data collected during the RI and prior to the RI and that it was able to conduct a detailed analysis of remedial alternatives based on this evaluation.

7. *ES-11 1st bullet. Have other biodegradation pathways been considered (sulfate reduction, metals reduction, etc)?*

Response: DEQ contracted with the Western Research Institute, which conducted and prepared the "Microbiological Study of Biodegradation of Petroleum Hydrocarbons and PCP in Groundwater," provided as Appendix A in the RI. The study was specific to the KRY Site and identified that the following anaerobic bacteria were present in the groundwater at the KRY Site: denitrifying, iron-reducing, sulfate-reducing, fermenting, methanogenic, and dechlorinating bacteria. However, the study also identified that denitrifying bacteria were the dominant species present in groundwater, and that they appear to be the most active population. Therefore, recommendations in the RI were specific to maximizing these bacteria.

8. *ES-11, 4th bullet. The explanation for the vertical gradients is likely related to the geologic conditions. Examination of well logs at KRY-125 and KRY-129 indicate that the shallow wells are screened in perched groundwater above a clay zone and are probably not in hydraulic communication with the deep wells of the unconfined aquifer. In fact, the disparity in vertical gradients at these locations supports hydraulic disconnection. Measurement of water levels on a monthly basis will probably not change this disparity.*

Mapping of the clay zone provides insight into where the perched water occurrences are located. Figures 2A and 2B are maps of the surface of the clay using data collected from soil borings drilled by both RETEC and MDEQ. If one overlays this clay surface contour with groundwater elevation, it is apparent that the locations where the groundwater exists two to three feet higher than the surrounding groundwater elevations overlap with the locations where the shallow clay zone is present. In other words, the clay is a fairly low permeability soil that creates a layer through which the groundwater cannot flow vertically and in essence causes the groundwater to perch on top of it. This perched water is separated from the underlying silty, sandy gravel aquifer by the low permeability clay zone, where present.

Response: Perching relates to accumulation of water atop of low-permeability units in the vadoze zone such that a locally saturated lens forms even though there is unsaturated material below. Site characterization activities conducted during the RI did not provide sufficient evidence to conclude that perched groundwater occurs in the vicinity of the listed wells KRY-125B and KRY-129B. Per communications with the geologist who supervised drilling, once the groundwater was first encountered the saturated groundwater conditions persisted all the way down the boreholes mentioned.

It appears that hydrogeologic conditions in the vicinity of wells KRY-125B and KRY-129B are more complex and locally do not fit a description of a single unconfined aquifer. Because of the low-permeability clay units present in the upper 100 to 200 feet of unconsolidated alluvial deposits underlying the KRY Site, the upper portion of the aquifer can be considered semi-confined and the lower portion can be considered confined in a couple of places beneath the site. For example, the hydrogeologic conditions between wells KRY-121B and KRY-129B (see cross section A-A' on Figure 3-3 in the RI) suggest that the regional aquifer can behave as semi-confined in its upper portion and confined in its lower portion. However, for simplicity the hydrogeologic conditions beneath the site were generalized and described primarily as a single unconfined aquifer because (1) local mounding, semi-confined and confined conditions occur in less than 20 percent of the site area and (2) major chemical plumes primarily exist within an unconfined part of the aquifer. In addition, local mounding conditions may not persist throughout the year and additional groundwater level data may help better explain the observed disparity in groundwater elevations of some well pairs such as KRY-121A & B and KRY-129A & B.

Although RETEC's Figures 2A and 2B are useful for analyzing the effects of low-permeability units on groundwater levels, the explanation that groundwater is perching on top of the clay layer does not appear to be the only one possible and does not seem to explain the absence of significant groundwater level disparity between A and B wells in other locations. For example, conditions near well pair KRY-130A & B are somewhat similar to those near wells pairs KRY-121A & B and KRY-129A & B. However, the disparity between groundwater levels measured in KRY-130A & B wells was much smaller than in the previously cited well pairs (0.17 ft in July, 2006 and 1.17 ft in August 2006).

9. *ES-11 6th bullet. The presence of dioxins in surface water, particularly in upgradient and*

upstream locations indicates that the dioxins are background and that further sampling is not necessary. If the KRY site were to be a source of dioxins to the stream it would likely be in the form of sediment impact due to the nature of the transport of dioxin, through wind transport or overland runoff. Dioxin compounds have a high affinity to adsorb to soil and sediment rather than to exist in a dissolved state. Dioxins are also common in an urban environment. Since the dioxins exist in surface water upstream and upgradient of the site, and because concentrations decrease from upstream to downstream locations it is apparent that the KPT site could not be contributing dioxin to the Stillwater River.

Response: Please see the response to the previous comment on this issue. DEQ collected a background/upstream sample to determine the concentrations of dioxins/furans in surface water and sediments prior to any potential influence from the KRY Site. As mentioned before, there were noticeable increases in dioxin/furan concentrations in surface water above the concentration detected in the background sample. The statement that concentrations decrease from upstream to downstream locations is incorrect, as evidenced by the data presented in the RI and discussed in the response to the previous comment on this issue. DEQ agrees that dioxins/furans have a high affinity to adsorb to soil/sediment; however, Montana numeric water quality standards (DEQ-7 standards) require that the analysis be conducted on an unfiltered sample. Since there were no increases in concentrations of dioxins/furans in sediment throughout the reach of the Stillwater River adjacent to the KRY Site, DEQ determined that further sampling of sediment and surface water was necessary before decisions could be made as to whether or not cleanup of the river was warranted. As mentioned previously, DEQ requested input from BNSF/RETEC on this matter, specifically regarding recommendations for additional sampling to be conducted. However, DEQ did not receive any meaningful input from BNSF/RETEC. Therefore, DEQ determined the additional sampling was needed, conducted that sampling, and determined that the KRY Site does not appear to be impacting the river.

10. *It is important to note in the RI document that in the process of calculating toxicity equivalencies (or TEQs) for dioxin compounds, that nondetect values of dioxin compounds always result in positive dioxin TEQs. This occurs because the non detect values (indicating that the lab did not detect the presence of the compound) are actually treated as positive values when calculating TEQs. This can be misleading when interpreting the surface water data. For example, surface water sample KRY-203 (duplicate) is considered a downstream sample (it is located northeast of the KPT property), and no dioxin compounds were above detection in the sample, but because of the way TEQs are calculated, the TEQ for the sample was 2 pg/L or ten times the upstream sample KRY200 concentration (0.29 pg/L) (west of the KPT property). KRY200 actually had some positive detections of dioxin compounds but due to differences in detection limits, the TEQ value appears higher in the downstream sample, KRY 203 (duplicate).*

Response: DEQ has other facilities with PCP and dioxin/furan contamination in the groundwater. At these facilities DEQ has found that it is possible for background, drinking water, and perimeter well samples to meet DEQ-7 human health standards for dioxin/furan TEQs even when one-half the detection limit is used for undetected congeners. DEQ believes the same would be true for surface water. It is inappropriate for BNSF/RETEC to assume that it is not possible to meet the DEQ-7 standard. Additionally, as DEQ has stated previously, if samples representing actual background conditions are collected and those samples exceed the DEQ-7 standard, the background concentration will be considered in establishing the remediation goal for the KRY Site. The analysis of background samples will account for any detection limits that are higher than the standard. However, the lowest reporting limits available for Method 8290 must be obtained from an appropriate laboratory and TEQs must be calculated using the WHO 1998 factors required in DEQ-7.

With regards to the surface water samples and how the TEQs were calculated, DEQ used the same approach in calculating TEQs for surface water samples as it did for all other dioxin/furan samples in all other media. In total, there were four surface water samples collected for dioxins/furans analysis; one background sample (KRY200SW001), two downstream samples (KRY202SW001 and KRY203SW001), and a duplicate sample of the farthest downstream sample (KRY203SW701). KRY200SW001, KRY202SW001, and KRY203SW001 all had positive detections of some of the dioxin/furan congeners resulting in the following TEQs, respectively: 5.83 pg/L, 6.65 pg/L, and 11.45 pg/L. Due to slightly higher reporting limits, KRY203SW701, the duplicate sample, did not result in any positive detections but had a TEQ concentration of 8.09 pg/L. This TEQ is still lower than the sample that it was a duplicate for, which had a TEQ of 11.45 pg/L. These slightly elevated reporting limits have no bearing on the decisions made regarding cleanup given that a background sample was collected, which would take into account any detection limits that are higher than the standard. Additionally, as mentioned before, DEQ collected additional samples from the surface water and sediments of the Stillwater River before making any final decisions on the potential cleanup of the river. These samples showed that there were no impacts to the river attributable to the KRY Site. Please note that DEQ discovered that TEQs were not calculated correctly for surface water and sediment samples, as well as a limited number of groundwater and surface soil samples, after the *Final Draft Remedial Investigation Report* was put out for public comment. These TEQs have been recalculated and referred to in this response, and will be included in the Final RI.

11. *ES-11 7th bullet. This scope appears to target Seaman Shelton? The compounds present at this site are not KRY-related COPCs and therefore should not be discussed in this RI.*

Response: As mentioned before, samples were collected from the Seaman Shelton Site and therefore will be discussed throughout the document. This recommendation is included because samples were collected from the Seaman Shelton Site as part of the process to delineate contamination associated with the KRY Site and DEQ believed that it could make recommendations about how to further delineate the petroleum contamination present at the Seaman Shelton Site. DEQ has made it very clear throughout the document that the Seaman Shelton Site is a separate site (handled by a separate DEQ program) with petroleum contamination issues different from the KRY Site.

12. *ES-12 1st bullet. The further investigation of the southern portion of the Reliance site should include careful consideration of the hydrogeology. Based on information to date, much of the site is underlain by fine-grained strata (lacustrine clay and silt) that LNAPL and groundwater perches upon. Somewhere along the southern portion of the site, the fine-*

grained strata transitions to coarser-grained materials that host the unconfined aquifer. The structure of the upper surface of the fine-grained strata likely dictates the location of LNAPL accumulation and perched groundwater.

Response: The suggested accumulation of LNAPL and perched groundwater atop of low-permeability units is not supported by recent observations. For example, the groundwater level in well KRY-136A is consistent with the level in nearby well KRY-114A, which is screened in high-permeability gravels and sands, but the measured thickness of LNAPL is greater in the latter (0.94 ft in KRY-114A vs. 0.39 ft in KRY-136A). Please see cross section B-B' on Figure 3-4 and the extent of LNAPL on Figure 3-9 in the RI.

As discussed in the RI, additional investigation and sampling within the southern half of the Reliance facility will provide information on vertical extent of petroleum hydrocarbon contamination and will provide information to further characterize site hydrogeology.

13. *ES-12, 2nd and fourth bullets. Re-sampling of the existing wells should be considered prior to drilling new wells on the site. It seems unusual that PCP (originally in a treatment solution of 5% PCP by weight) was detected at deep levels in the aquifer given its association with an LNAPL carrier solution. In other words, the oil or LNAPL is less dense than water and thus floats on top of the water versus sinking to the bottom of the aquifer. It also seems unusual that the concentrations found in the RI would increase in the downgradient direction. Has any consideration been made toward possible cross-contamination such as improper decontamination of drilling equipment, were these wells drilled after contaminated wells, where well screens/materials stored near possible PCP sources, how were well sampling materials decontaminated? No decontamination data could be located in the RI to ensure that equipment was clean before coming in contact with groundwater to be sampled. Please supply this decon data for our review.*

Response: DEQ had to make recommendations based on the data available, which resulted in recommendations for additional wells. It was not surprising to see elevated PCP concentrations in the deeper portion of the aquifer during this investigation given that elevated levels of PCP have been detected in deep wells installed in the northern portion of the KPT and Reliance facilities for years. These original deep wells were installed after DEQ required them due to contamination of a residential well, which ultimately required replacement and hookup of the residence to the public water supply. There is a history of the PCP being detected in the deeper portion of the aquifer, which is why DEQ and its consultant determined that it was necessary to install wells screened in both the shallow and deeper portions of the aquifer. It is true that the PCP treating solution used would be expected to float, as the petroleum carrier does. However, based on the data collected over the years, it is apparent that at least some of the dissolved-phase PCP is present at lower depths within certain areas of the aquifer. This is most likely explained by a combination of the complex hydrogeology at the KRY Site and the fact that over time chemicals may potentially separate. PCP has a higher specific gravity than either diesel or water, which may cause it to sink, even though the diesel may float.

Regarding the potential for cross-contamination due to improper decontamination, DEQ does not believe that this is likely. Proper decontamination protocols were followed, and are explained in detail in the *Final Remedial Investigation Work Plan* (dated March 2006), with any deviations explained within the RI text. Copies of all field log books are included as Appendix B of the RI, which should provide additional detail about decontamination procedures followed.

TEXT COMMENTS

1. *Actual site boundaries are not yet determined from groundwater contamination. The site boundary should be identified by MCLs, not non-detect concentrations.*

Response: CECRA defines a facility as follows: "any site or area where a hazardous or deleterious substance has been deposited, stored, disposed of, placed, or otherwise come to be located." Therefore, DEQ defines the facility as anywhere contamination has come to be located and has assigned specific boundaries based on the presence of contamination identified in the RI. Additionally, DEQ determined "general boundaries" based on nearby roads and/or landmarks to make it easy for the public to understand. DEQ has routinely required at CECRA facilities that the required reporting limit in DEQ-7 be used in contaminant isopleth maps, as well as the DEQ-7 or MCL standard, to depict contamination. Therefore, given that DEQ considers the facility to be anywhere contamination has come to be located, it is appropriate that DEQ included within the facility boundary all areas with detectable contamination, creating a boundary where there was recent data to show that contamination was not present.

2. *Page 2-2, Section 2.2.1. Surface soil samples were collected from four different depth ranges: 0-6 and 0-2 feet as well as 0.5–1 foot and 1-2 feet. The reason for these variations in surface soil depths is not explained. It is also not clear how these differences in soil sample depth will be treated in the risk analysis or the FS. The RI should further explain the use of these data.*

Response: DEQ collected surface soil samples from four different intervals, but not the intervals specified in the comment. DEQ collected samples from 0-2 inches, 0-6 inches, 6-12 inches, and 12-24 inches below ground surface (bgs), although not all intervals were sampled at each location. Samples within the identified facility boundaries (at the time) were collected from the 0-6 inch interval, and samples outside of the identified facility boundaries were collected from the 0-2 inch interval. The 0-6 inch interval is generally appropriate for source area samples and the 0-2 inch interval for areas expected to be contaminated as a result of aerial deposition, etc. The 6-12 inch and 12-24 inch intervals were specifically collected to further characterize the surface soil and were not collected at each sample point. Samples from the deeper two intervals were only analyzed for PCP and dioxins/furans. Additional detail about the sample intervals and where specific intervals were sampled is available in the *Final Remedial Investigation Work Plan* (dated March 2006).

All of the intervals fall within the surface soil depth of 0-2 feet below ground surface. Therefore, they will not be treated differently in the risk analysis. However, for feasibility study purposes, the various intervals will actually help to more accurately determine the volumes of contaminated soil present for various compounds. In many locations, it will not be necessary to simply assume that the entire 0-2 foot surface soil profile is contaminated because there will be data to show the presence or absence of contamination within the vertical soil profile.

Information regarding the use of the data was provided in the *Final Remedial Investigation Work Plan* (dated March 2006) along with justification for sample analyses, locations, etc. That information will not be reproduced in the RI.

3. *Page 2-3, why was opportunistic surface sample collected at borehole KRY666 on Rocky Mountain Marine property collected?*

Response: As is stated in Section 2.2.2, "soil boring KRY-666 was drilled south of the Yale facility to delineate the edge of fill material and to obtain subsurface soil samples from native soil." Collection of a surface soil sample provided additional information regarding the potential presence of contamination in the surface soil and when combined with data collected from the subsurface soil samples, a vertical profile of the boring.

4. *Page 2-3, Section 2.2.2 Subsurface Soil Sampling. The general drilling methodologies (hollow-stem augering and rotosonic) were well-suited for effective investigation of the KRY site.*

Response: Comment noted.

5. *Section 2.2.2 Page 2-3 and Appendix D. Sonic drill logs provide lithologic descriptions and depth intervals similar to those of hollow-stem auger logs, however, appear to lack PID/FID screening, odor or staining, and sample recovery information. Given the high-tech sonic drilling approach and sample integrity it provides, why are the logs (Appendix D) from the sonic drilling incomplete? Was this a deviation from project scope? If so, why?*

Response: Since the paired wells (shallow and deep) were placed directly adjacent to each other, samples were collected from only one of the boreholes. The sampling protocol was that samples would be collected from whichever borehole was drilled first, which was anticipated to be and usually was that installed by the hollow-stem auger rig, as it was drilling the shallow wells and therefore moved more quickly. This explains why the information on the well logs for the hollow-stem auger wells generally include more PID/FID screening values, and sample collection information and is not a deviation from project scope. However, the following wells drilled by the sonic rig were the first in the pair to be drilled, and therefore, PID/FID screening, odor or staining, and sample recovery information was provided: KRY - 107B, 112B, 114B, 115B, 118B, 121B, 125B, and 130B. Additionally, the well logs for the deeper wells, which were drilled using the sonic rig, include odor and staining information as appropriate. The extra drilling performed by the sonic rig at each of the deeper well locations was through the vadose (saturated) zone, and therefore, no samples were necessary and only lithologic desriptions are provided. The determination to take PID/FID readings was made by the geologist in the field when deemed appropriate based on observations of staining and odor or indications and knowledge, and was generally tied to sample collection.

6. *Section 2.2.2, Pg 2-4, second arrow. One of the soil borings is referenced to the northern Reliance Property, KRY-670, and is actually shown south of KPT (see Figure 4-15A for example).*

Response: Soil boring KRY-670 is referenced in error in this section. Soil boring KRY-670 is actually located on the southern portion of the KPT facility. Soil boring KRY-671 is located on the northern portion of the Reliance Facility and this section will be revised to reference the correct soil boring.

7. *Page 2-5 Section 2.2, Second bullet. Physical soil parameter samples were collected from the auger flights. This method results in a poor integrity sample not specific to a depth interval. Essentially this method provides a blended/mixed sample that is difficult to correlate. A better approach to obtain the desired sample volume would have been to do test pits with a backhoe.*

Response: As stated in the Sampling and Analysis Plan within the Final Remedial Investigation Work Plan, these samples were collected to characterize the groundwater flow field, to aid in evaluating remedial alternatives, and to aid in calculating a scientifically-based dilution attenuation factor using VS2DT software. Therefore, it was not necessary to have samples that were specific to a depth interval and DEQ believes that the methodology for collecting these samples was adequate. Additionally, from each boring, one sample was collected from the unsaturated zone and one from the saturated zone. A backhoe would have needed to remove enormous quantities of soil in order to reach the saturated zone to collect the deeper of the two samples. Therefore, DEQ believed that it was less expensive and more efficient (less soil to remove) to utilize the drill rigs that were already mobilized to collect these samples, rather than spending additional resources (financial and otherwise) on mobilizing a backhoe.

8. *Page 2-8. Section 2.3.1. KRY-121B was drilled to 244 feet bgs after the base of the aquifer was established at 130 feet bgs. The objective was to apparently construct a well into the underlying confined aquifer, a "C" well. The well boring was eventually abandoned clay was encountered from 130 to 244 feet bgs and the boring was converted to a "B" well screened at the based of the unconfined aquifer. The purpose of investigating the base of the unconfined aquifer is not well-founded given the physical nature of the contaminants of concern (COC), let alone exploring to even a deeper level. It is also not understood why a boring would continue 114 feet into a clay confining unit regardless of scope. This decision was outside the realm of defining nature and extent or to advance the CSM. Typically, a well-boring would be terminated well before that much clay was encountered, especially given the depositional history of the Flathead Valley where fined-grained lacustrine sediment packages several hundred feet thick are common.*

Response: As explained in previous responses, DEQ believes that investigation of the deeper portion of the unconfined aquifer was necessary given the detections of PCP at depth in historic data collected by BNSF/RETEC. Previous reports from Pioneer Technical Services and RETEC stated that a silty clay unit, at least 15 feet thick and up to 51 feet thick, was present locally at approximately 120 feet below ground surface. One of the RI objectives was to delineate the vertical and horizontal extent of groundwater contamination, and DEQ believed it was possible that there was potential for interconnection between the two aquifers. Therefore, DEQ decided to install one well into the confined aquifer to ensure that there was no contamination present. DEQ had no way of knowing how thick the confining layer was other than the information provided in the previous reports and stopped drilling once it was apparent that the potential for contamination of the confined aquifer was low. DEQ then determined it was appropriate to reconfigure the well to be the "B" or deep well, since it was not going to be used as a confined aquifer well and followed the procedures specified in the RI to install a deep monitoring well. This eliminated the need to drill a third well at this location.

9. *Page 2-8, Last Bullet. It appears that the construction of a well pair at KRY-110A/B was not appropriate to assess the nature and extent of contaminants in groundwater. When clay was encountered from 9-41 feet, and water table found at 12 feet bgs, the shallow well was screened below the water table. This is not an accepted procedure to define nature and extent for LNAPL constituents and perhaps not sufficient to measure the static water level/water table elevation.*

   Well KRY-130A (Kari Dodge property). Well KRY-130A was screened below the water table. The investigation of LNAPL constituents should bisect the water table regardless of lithology. This well does not assist with characterization of potential water table impacts.

Response: Although well KRY-110A is not screened across the water table, the interval in which the well is screened well represents the main aquifer. This well is farther away from the suspected sources of contamination than other wells in which LNAPL constituents were not detected (for example, well KPT-9). Well pair KRY-110A/B is up- or cross-gradient from the suspected sources of contamination. Boring logs for both wells did not indicate any staining, odor, or a presence of LNAPL or contamination atop of clay unit and across its thickness. Hollow-stem auger drilling was used to complete well KRY-110A and sonic drilling was used for well KRY-110B. Both wells are screened in what is likely a confined or semi-confined part of the aquifer. Based on available information for these and nearby wells, it is unlikely that LNAPL constituents would be encountered if well KRY-110A had been screened at a shallower interval across the water table.

In the investigation of LNAPL constituents, wells can be installed in a variety of ways depending on site conditions and geology to best account for actual conditions within the subsurface. As stated in the last bullet on page 2-8 of the RI, "two shallow wells [including KRY-110A and KRY-130A] were screened below the water table to account for the presence of clay and the concern that contamination would not be detected if the wells were screened within the clay layer (in other words, that the contaminants would follow the alluvial sediments where groundwater flow was not impeded). A dense clay layer was present in well KRY-130A from 15 to 30 feet bgs and the water table was reached at approximately 24 feet bgs. This well was screened from 25 to 45 feet bgs with 5 feet of screen in the clay and 15 feet of screen in sand and gravel."

10. *Page 2-9. The standard procedure is to use dedicated or new tubing for each well when sampling. Were there any field blanks collected to rule out cross-contamination from not using new, clean sampling tubing at each well? Please explain the type of decontamination procedures used for all types of sampling methods. We could not find this information in the RI document. We also could not find the decon or field blanks collected during sampling. Please provide these data.*

Response: DEQ is aware of what the standard procedures are for using disposable or new tubing for well sampling. However, as stated in Section 2.3.2 of the RI, which is a section specific to monitoring well development and not sampling, there were deviations from the plan as specified in the *Final Remedial Investigation Work Plan* (dated March 2006). As is stated in Section 2.3.2 of the RI, "the design of the Grundfos pump and its power requirements made it impractical to disconnect and reattach disposable tubing after each well." The section then goes on to describe the procedures used to decontaminate the pump and associated tubing, and specifies that an additional step of looking at borehole logs and well records to determine which wells appeared to be contaminated were consulted so that wells were developed in a least contaminated to most contaminated order. DEQ's contractor followed appropriate procedures to protect against cross-contamination of wells using all of the information available to them at that time. Specific decontamination procedures are provided in the *Final Remedial Investigation Work Plan* (dated March 2006). Any deviations from the procedures specified in the SAP are reported in the RI, as was done in the section referred to above.

Sample quality control, including field quality control samples, are discussed in Section 2.7.3 of the RI. As specified in the RI, Table 2-3 (mistakenly recorded as Table 2-4 in the text) provides a summary of the types and frequency of collection of field quality control samples. Field quality control samples are included in the laboratory data along with other sample data and this data is available upon request. DEQ will also include a summary table of the quality control data in Appendix G along with all of the other summary tables for data collected during the RI. Additionally, an assessment of field and laboratory sample quality control and overall data quality is provided in Appendix H.

Equipment rinsate samples, to which DEQ believes RETEC is referring with the terms "decon or field blanks" were collected as part of the field quality control samples, although they were not collected specifically to look at the tubing associated with the well development activities. Equipment rinsate samples were collected at a frequency of 5%, which is standard procedure, and resulted in the collection of 22 samples. The equipment rinsate samples would have been collected after decontamination of various pieces of equipment utilized in sample collection efforts using the same or similar procedures followed for decontamination of the Grundfos pump and associated tubing. Since there were no quality assurance problems associated with the equipment rinsate samples, DEQ feels that the decontamination procedures were adequate to eliminate contamination on the Grundfos pump and associated tubing and therefore believes that it is unlikely that cross-contamination occurred as a result of well development activities. However, additional sampling of these wells in the future will help evaluate consistency in the results.

11. *Page 2-9. The development logs (Appendix E) show that KRY-133A was developed prior to KRY-121B where low level PCP was detected. This represents a "dirty to clean" well approach that contradicts the order of well development stated in the last sentence of Section 2.3.2. In addition, there was a great deal of sediment in well KRY121B indicating that the source of PCP could be tied to the sediment versus the dissolved phase groundwater in the well. The development order from dirty to clean wells can potentially result in cross contamination.*

Response: No samples were taken from well KRY-133A in June-July 2006, as it was installed to depict extent of NAPL contamination. However, the cross gradient position of this well relative to the suspected source area and low detections of PCP in nearby wells suggest that this well is not necessarily "dirty."

The wells were developed prior to taking any groundwater samples. Without sample results it is impossible to reliably determine the amount of contamination at each well. The "clean to dirty" approach is only one of several safe guard methods used to prevent cross contamination during the RI. None of the QA/QC samples displayed any source of cross contamination. DEQ's consultants took great care not to cross contaminate any of the wells and/or samples.

Low-flow sampling methodology was used to collect the samples. This method minimizes the disturbance of the water column in a well and agitation of sediment which may be present at the well bottom. Although PCP is known to sorb to organic carbon in soil and to fine-grained sediments, its detection in well KRY-121B may not be related to the sediments in the well, but may represent the actual dissolved concentration of PCP in the well. PCP is heavier than water, so it may have migrated downward in dissolved phase from the shallow source area. Another possibility is that the PCP is following a preferential flow pathway caused by the subsurface lithology. PCP was detected in two of the deep wells downgradient of the former treatment area: KRY-121B and KRY-129B. The detection in well KRY-129B was confirmed when it was re-sampled in September 2007 by RETEC (split sample collected by DEQ), using the same sampling methodology used by DEQ for the RI.

12. *Note that the October 2006 version of the draft RI stated that on page 3-6, impairment of Stillwater River was currently due to nitrogen and phosphorus and other non-point contributors, not possible KPT contamination. Why was this statement removed in the January version of the draft RI? It would be important to consider this information during any future cleanup decisions, should they become necessary.*

Response: The *Draft Remedial Investigation Report* (dated October 2006) did include information about impairment of beneficial uses of the Stillwater River caused by elevated concentrations of nitrate and phosphorus. DEQ had this information removed from the *Final Draft Remedial Investigation Report* (dated January 2007), which is the document on which these comments are based, because it had no bearing on the investigation at hand. The information that is necessary for the section is still present and includes specifics about flood plains, classification of the river with regard to the beneficial uses it is capable of supporting, and the like. Information regarding the river not supporting a cold-water fishery or a drinking water supply is not needed, since DEQ is not attempting to prove or disprove these claims. Nitrate and phosphorus are not contaminants of concern at the KRY Site and therefore their presence in the Stillwater River is of no consequence to the remedial investigation or future cleanup decisions. Additionally, in discussions with the DEQ programs that oversee water quality monitoring, standards, etc., it was determined that contaminants such as those found at the KRY Site are not part of their sampling program. Therefore, it is inappropriate to assume that impairment of the river is due solely to the presence of nitrogen and phosphorus and not related to contamination issues stemming from the KRY Site, since these contaminants would not have been included in data on which this statement was based.

13. *Page 3-7, Section 3.6.1. Why is the clay unit comprised of interbedded lacustrine silt and clay not included as one of the hydrostratigraphic units? This unit underlies the majority of the Reliance and Yale sites, and locally contains perched fluids (LNAPL and groundwater). The unit is mentioned on page 3-9 and Section 3.6.1.*

Response: This unit is not mentioned on page 3-7 as one of the distinctive hydrostratigraphic units present at the KRY Site because DEQ and its contractor do not believe it to be a distinctive unit. Rather, it is believed that this unit is a part of the larger unconfined aquifer. Please see previous responses to comments regarding this issue. Additionally, page 3-9, Section 3.6.1 (referenced in the above comment) specifically refers to the body of clay as appearing "responsible for apparent water level mounding and complicated horizontal groundwater flow." This section will be revised to reflect that there are discontinuous lenses of clays and/or silts within the larger unconfined aquifer.

14. *Page 3-10 and 3-11, Vertical flow gradients seem to be inconclusive at KRY. Well pair KPT-129A/B does exhibit an anomalous downward vertical gradient. However, in reviewing the well logs and cross section A-A', the lithology between these well screen intervals is highly interbedded with low permeability strata (silts and clays). It is not clear that these wells even measure the same aquifer as implied. In fact, Figures 3-3 and 3-7 show KRY-129A screened across perched groundwater that basically indicate that the wells are not in hydraulic communication.*

The RI report often refers to groundwater mounding present at the site and we do not believe groundwater is mounding at this site. The presence of the shallow clay on the northern part of the Reliance property and east of the Yale property provide perfect conditions for perching of groundwater above the regional water table aquifer. The information that supports this conclusion is the 2 to 3 foot difference in groundwater elevation between the perched water and the regional water table as well as the lack of any subsurface structural feature to create a mound (such as a fault or bedrock ridge) or the presence of surficial source of groundwater (such as a pond) to create a groundwater mound. Please refer again to Figures 2A and 2B (attached) that show the overlap of the clay presence with the perched groundwater elevations.

The interpretation of perched water is consistent with the presence of the low permeability clay features found during RETEC's and MDEQ's site investigations. The perched water *elevations should not be contoured on the same map as the shallow aquifer because this would imply the two water bodies are connected. In the book* Unsaturated Zone Hydrology*, by Gary Guymon, the author states that "localized saturation of soils in the unsaturated zone may exist due to semipervious soils, which become saturated and cause the overlying more pervious soils to be saturated." This clearly describes the KRY site perched water situation; therefore, the perched water condition should be contoured separately from the uppermost aquifer elevations.*

At the February 20th public meeting in Kalispell, MDEQ made the statement that the PCP is sinking east of the gravel pit due to the type of geology. Please explain the mechanism for the PCP to sink if the PCP is tied to the carrier diesel oil which is an LNAPL and the groundwater contours do not support a downward vertical component of flow in that area. The groundwater is actually perched on clay below the Yale property and should not be contoured with the underlying unconfined aquifer. Therefore, no flow pathway exists to cause the PCP to sink within the unconfined aquifer. Is it possible another mechanism exists for the PCP to be present in KRY129B such as cross contamination or decontamination methods? Has anyone looked into this possibility? If not, could this be done?

Response: Vertical flow gradients provide information on where at the KRY Site the behavior of the aquifer likely changes from unconfined to semi-confined or confined. Acknowledging that "mounding" may not be a perfect description of shallow groundwater elevations at the Reliance and Yale facilities, the presented groundwater elevation maps provide a reasonable and useful simplification for complex flow patterns that exist at the site because of shallow clay units.

As discussed in response to previous comments dealing with this issue, site characterization activities conducted during the RI did not provide sufficient evidence to conclude that perched groundwater occurs in the vicinity of the listed wells KRY-125B and KRY-129B.

The provided interpretations of shallow groundwater elevations on Figures 3-7A and 3-7B are possible and allow reasonable evaluation of potential contaminant migration. No changes are proposed at this time.

None of the QA/QC samples displayed any source of cross contamination. DEQ's consultants took great care not to cross contaminate any of the wells and/or samples. Over time these chemicals will tend to settle out and potentially separate. As the PCP separates from the diesel it may sink due to the fact PCP has a higher specific gravity than does diesel or water. Additionally, the PCP detection in well KRY-129B was confirmed when it was re-sampled in September 2007 by RETEC (split sample collected by DEQ). This further confirms that the detection was not the result of cross-contamination.

15. Page 3-10, last paragraph. This paragraph refers to mounding conditions at the Reliance and Yale areas. To aid in the understanding of hydrogeologic conditions (flow directions, saturated thickness etc.), construction of structure contours of the upper surface of the clay unit would be useful (See Figures 2A and 2B, attached, and Comment #ES-11, above.

Response: See previous responses to comments on this issue.

16. Page 3-11 last paragraph. The large downward gradients between well pairs KRY-125A&B and KRY 129A&B are related to the geologic strata the wells are constructed within and based on this are probably not linked to the same aquifer conditions.

Response: Please see the responses to previous comments regarding this issue.

17. Section 4.0, the nature and extent are defined by aerial extent, but depths are not noted. What assumptions will be used for depths to calculate impacted volumes for the Feasibility Study? It would be useful to develop maps that show screening level exceedances by surface, vadose, and saturated zone intervals for the various COPCs across the site.

Response: The nature and extent of contamination are defined by aerial extent in most of the figures associated with this section. However, for groundwater, the figures provide differing plumes for both the shallow and deep portions of the aquifer. The surface soil figures are separated into different depths. For subsurface soil, all depths are reported on the figure. DEQ included figures in the Feasibility Study that portray more of the information RETEC is requesting, but those figures were developed for the purposes of calculating volumes and therefore were not completed for inclusion in the RI. The following assumptions were used to determine the volumes of contaminated groundwater and soil at the KRY Site:

1. If all surface soil intervals were available (i.e., 0-2" or 0-6", 6-12", and 12-24") then the actual contaminated intervals were used to determine volume of soil. If only a 0-2" or 0-6" sample was available, then the following criteria were applied: If the sample was from an area that showed subsurface soil contamination also, then the assumption was made that the entire 0-2' interval was contaminated. If there was reason to believe the contamination was only surficial (windblown or tracked in), then the assumption was made that only the upper interval was contaminated.

2. All exceedances of subsurface soil clean-up levels were evaluated on an individual basis. Sample depth, borelogs (PID readings and soil type), and notes regarding staining and odor were considered in making a determination for thickness of the contaminated subsurface soil.

3. In apparent "smear zone" areas, twice the evident groundwater elevation fluctuation plus NAPL thickness was assumed the minimum thickness of the contaminated subsurface soil. Anything greater than that was based upon the subsurface soil assumptions listed in #2.

4. Groundwater was divided into two approximately equal zones (upper and lower based on screened interval) for specific areas. Any exceedance of the groundwater cleanup levels in either zone resulted in that individual zone being considered contaminated.

18. Page 4-1 through rest of section. It should be also noted that data tables are not provided in Section 4 that show subsurface soil data. Those that are provided in the Appendices lack depths. Overall the subsurface data is difficult to access and interpret. The RI should include cross-sections that show the data and define vertical extent of soil impacts.

Response: Summary tables for subsurface soil data are provided in Appendix G, as they are for all other media sampled. This is identified in the last sentence of the first paragraph of Section 4.4 in the RI, which described the results of the subsurface soil sampling. None of the sections of the RI which discuss sample results for various media include tables within the section, so DEQ is unsure of why RETEC would assume that the subsurface soil data would be presented in such a manner. The tables presented in Appendix G that are referred to in the comment above do, in fact, include depths. An upper depth and lower depth is provided at the top of the table along with the sample identification information, date collected, and type of sample collected. Detailed cross-sections are provided as figures in the RI and DEQ does not feel it is necessary to include data on those cross-sections given that other figures are provided to show sample locations and data. Additional figures depicting the vertical extent of contamination are provided in the Feasibility Study Report. DEQ believes that the data is easy to access and interpret and no change will be made to the document as a result of this comment.

19. *Page 4-7, the source of benzene from Northern Energy property is distinctly separate from KRY sources. This should not be part of the RI scope.*

Response: The RI very clearly states that the source of benzene detected in groundwater samples that exceed screening criteria emanates from the Seaman Shelton Site and not from the KRY Site. However, as mentioned previously, samples that were collected during the RI will be discussed within the RI Report, regardless of source.

20. *Page 5-24. Bottom of Page. We agree with the conclusions that DNAPL presence is not confirmed nor likely based on groundwater data.*

Response: Comment noted.

21. *Page 6-1. Section 6. Recommendations/Data Gaps. Prior to expanded exploration of the deep aquifer conditions, and installation of wells, we recommend re-sampling of the new wells KRY-121B and KRY129B. There was potential for cross contamination through the development and/or sampling process and this should be ruled out prior to continued definition of nature and extent. As it stands, non-detect PCP data in the deep aquifer is present between KPT and downgradient wells KRY-121B and 129B and the concentration increases in the downgradient direction. This condition is not indicative of a plume from KPT, where one typically expects a higher concentration in a source area, decreasing in the downgradient direction.*

    Please explain how the risk analysis will be used during preparation of the FS? What risk based number will be used to make remedial action decisions?

Response: Additional sampling of the newly installed monitoring wells is always desirable. However, DEQ does not believe that the contamination detected in wells KRY-121B and KRY-129B is a result of cross-contamination. DEQ's consultants took specific precautions to prevent cross-contamination from occurring and collected field quality control samples as well. Re-sampling of well KRY-129B by RETEC in September 2007 confirmed the previous detection of PCP in this well and provides further support for DEQ's belief that the detections in wells KRY-121B and KRY-129B are not the result of cross-contamination. Please see previous responses to comments regarding this issue.

Regarding the presence of non-detect wells between the former treatment area at KPT and wells KRY-121B and KRY-129B, there is one deep well in the down gradient direction; well KRY-111B, which was non-detect for PCP. However, the shallow well at the same location, KRY-111A, had a PCP detection of 2,390 parts per billion (ppb) (compared to the water quality standard of 1 ppb – see Figure 4-1 in the RI). The next well pair is the KRY-121 series, which had detections of PCP in both the shallow and deep wells (0.25 ppb and 0.13 ppb respectively). The cross section depicted in Figure 3-3 shows that there is a silt and clay layer that exists in the vicinity of the KRY-129 series wells, with a sand and gravel layer underneath. The deep well, KRY-129B, which has a PCP concentration of 40 ppb is screened in this sand layer. It appears that the contaminated groundwater is flowing under the silt and clay layers and into the sand/gravel layers and that may partially explain why there is a higher detection of contamination in the deep well. Another potential explanation may be that the PCP has separated from the diesel carrier solution and, due to the fact that it has a higher specific gravity than water, has sunk to the lower depths of the aquifer. DEQ was not surprised to see PCP detected in this location, although the concentration detected was not expected. However, with no deep well downgradient, DEQ cannot determine if there is something that may cause the water to pool in this area, allowing for rising concentrations, or if there is some other explanation. It is possible that the detection is simply the result of a slug of contamination that has moved from the former treatment area of KPT downgradient due to the limited area of influence of the ozonation system and it happened to be detected in that particular well. Due to this data gap, DEQ and its consultant have recommended another deep well down gradient of KRY-129B. Please note however, that resampling of well KRY-129B in September 2007 confirmed the RI results, as discussed previously.

The purpose of DEQ's risk analysis was to calculate risk-based cleanup levels that were used to determine areas of the KRY Site that require cleanup. These cleanup levels were compared to contaminant concentrations in various media and helped calculate volumes of contaminated soil, etc. There are cleanup levels for surface soil, subsurface soil, soil leaching to groundwater, and groundwater, depending on the compound. The final risk analysis is included in the Feasibility Study.

22. *Page 6-2. Is more vertical definition of contamination really necessary? (Likewise, are three more wells, at Yale Oil, Office Max, and Town Pump, really necessary? Fig 2-2.)*

Yale refinery is considered a "former" source area by MDEQ comment #60 (p.4-15) because soil levels are not above screening levels but what about concentrations which lead to groundwater impacts? Have these been considered?

Response: For the reasons stated previously in these responses to comments, DEQ believes that more vertical definition of the contamination at the eastern edge of the plume (in the intermediate and deep portions of the aquifer) is necessary. The recommendations included in the RI for additional wells also provide the justification for installation of these wells. As stated previously, DEQ agrees with BNSF/RETEC that it is a good idea to resample the newly installed wells. However, DEQ believes that the wells recommended for installation are necessary to accurately characterize the downgradient extent of contamination. Additionally, for clarification, the locations of the wells being referred to in the comment are actually downgradient of the Town Pump property, within the Yale facility (which is also the location of Office Max), and on the gravel pit property.

The DEQ comment being referred to here was a comment to DEQ's consultant for revision of the Draft RI. That comment referred to a statement regarding the Yale facility source area. DEQ and its consultant determined that it was appropriate to refer to the source areas in the following manner: "Primary source areas have been identified based on the results of groundwater and soil sampling. Primary sources of organic COPCs appear to be at the KPT and Reliance facilities with lesser sources at the Yale Oil facility." This language is used in Section 4.6.1 of the RI. The screening levels DEQ used for comparison do take into account the potential for contamination to leach from soil to groundwater.

FIGURE COMMENTS

1. *Figure 1-2 KPT property is shown as extending as far north as the river. The actual property boundary is further south.*

<u>Response</u>: Figure 1-2 depicts the approximate boundaries of the facilities, and therefore the KRY Site. The KPT facility is not limited to property owned by BNSF and therefore is not depicted as such. The KPT facility includes any site or location where contamination has come to be located, which includes the groundwater beneath the Reliance and Yale facilities. No changes will be made as a result of this comment.

2. *Figure 3-5 Cross Section C-C'. The clay unit on the north side of the section is thicker than shown. In November 2005, the well boring for KPT-18 was advanced 54 feet bgs and was still in clay.*

<u>Response</u>: DEQ and its consultant will look into this more closely and cross section C-C' will be evaluated and revised if necessary in the final version of the report.

3. *Figures 3-4 and 3-5; Appendix D. It also appears that casing off of LNAPL zones was not implemented for new wells across the entire Reliance property (Wells KRY-135A, 136A, 137A, and 138A). Running split spoons through the augers with LNAPL inside them stains the soil cores and makes it difficult to discern the vertical extent of hydrocarbon impacts and likely contributed to drag down of contamination as the boring advanced. From well logs and Figure 3-4 (cross section B-B'), it appears wells KRY-136A and 137A unnecessarily breached a perched aquifer with LNAPL present and created a potential conduit to an underlying aquifer. This could cause contamination of a previously unimpacted area due to the method of drilling through a contaminated zone and carrying the contamination to deeper zones.*

Response: DEQ's consultants took great care to avoid carrying contamination to deeper zones. Due to the uncertain nature of the subsurface, it is not always possible to identify the maximum extent required when drilling a well. However, field results do not indicate that any zone was breached. In addition, field observations do not support a sole aquifer definition of perched. Please see responses to previous comments on this issue.

4. *Figure 3-7. Groundwater flow lines are not depicted perpendicular to contour lines and, as a result, show inaccurate flow directions. Groundwater contours, particularly for the shallow unconfined aquifer, basically ignore the subsurface lithology such as deflection by fine-grained clay beds and separation from perched groundwater. Perched water elevations should not be contoured with the unconfined aquifer contours. RETEC has found that with additional data on the surface of the clay zone that these 2 units are separate, as illustrated on Figures 2A and 2B, attached.*

Response: With the exception of the northernmost flow direction arrow on Figure 3-7A, flow direction lines are shown reasonably perpendicular to the water table contours. The specific arrow mentioned will be rectified to be more perpendicular to the contours in the Final RI. As discussed in responses to previous comments, the presented groundwater elevations maps provide a reasonable and useful simplification for complex flow patterns that exist at the KRY Site because of shallow clay units.

5. *Figure 3-7. The surface water elevation at KRY-204 is 4.6 feet higher than the upstream location KRY-203. Is this accurate?*

Response: This is a typographical error and will be corrected in the Final RI.

6. *Figure 3-9, the LNAPL Extent Map, shows a continuous product plume across the KRY Site from KPT-3 to the western side of the Reliance Property. The plume area depicted contains several wells screened across the water table without measurable product (KPT-4, KPT-5, KRY-134, GW-5). Areas are shaded where LNAPL data is not present. The map also gives the appearance that the LNAPL plume is homogeneous in terms of volume, thickness and petroleum characteristics. The data shows that LNAPL characteristics vary across the Site and occur in pockets that are chemically and physically unique. Figure 3-9 should reflect those unique characteristics and the extent of the LNAPL plume should be limited to wells with measurable LNAPL (> 0.01 feet). Further test pits completed in November 2005 encountered LNAPL (chemically determined to be weathered crude or Bunker C oil) beneath the northern Reliance property. This area of LNAPL is not presented on Figure 3-9.*

   Figure 3 (attached) shows the distribution of LNAPL across the KRY Site and associated gas chromatographs identifying the type of LNAPL in wells, as analyzed by Torkelson Geochemistry, Inc. The map also shows LNAPL thickness from MDEQ-collected November 2006 water level and product level measurements. The gas chromatographs show fuel oil in KPT-12, KPT-2 and OSW-1; weathered bunker oil in test pits TP05-9, TP05-5, TP05-14, TP05-28 and well KPT-17; and weathered gasoline and middle distillate oil at downgradient well PW-1. This information is important for selecting appropriate remediation actions across the KRY Site.

Response: The provided information and comments will be used to review Figure 3-9, the estimated extent of LNAPL in groundwater. In addition, groundwater elevation and product level thickness measurements collected at this site after the Final Draft RI was produced will also be used to update Figure 3-9, as appropriate, in the Final RI.

7. *Figures 3-7A and 3-8 show a 10 foot vertical gradient in wells KRY-129A and 129B. KRY-129B is the well with 40 ppb PCP with no PCP detected in the shallow well, KRY-129A. Shallow well groundwater appears to be perched.*

Response: Please see previous responses to comments regarding this issue.

8. *Figure 4-1. The PCP extent in groundwater is shaded across data points that denote the compound was undetected denoted by a "U" qualifier. Nature and extent should not be mapped based on nondetect data. The interpretation misrepresents the data set and projects erroneous migration pathways. In particular, the map portrays a dissolved PCP lobe to the northeast into the residential area. This pathway ignores groundwater flow direction (which is not correctly portrayed on the groundwater contour map as mentioned earlier) and subsurface lithology. Based on results from the 2005 RETEC investigation, the Swank Property is underlain by a clay unit and a perched aquifer which is detached from the upper aquifer. For the pathway to the northeast to exist as portrayed in Figure 4-1, PCP would have to migrate upgradient.*

   Many of the wells used to define the nature and extent of PCP are not linked to the upper portion of the unconfined aquifer, but rather perched aquifer(s). Examples of perched aquifer wells include KPT-17, GWRR-4, -3, -6, -7, GWY-3 and others. The RETEC investigation in 2005 did not find evidence of groundwater mounding as shown on Figure 3-7, but rather saturation (water/LNAPL) located on the topographic lows and swales on top of the clay zones. Combining the perched groundwater well elevations with the unconfined aquifer groundwater contours leads to erroneous interpretation of groundwater flow direction.

Response: A dissolved PCP lobe to the northeast into the residential area was shown very conservatively and with question marks (see Figure 4-1) since it was prepared using only two detections in residential wells RW-1 and RW-12. In addition, the RI clearly states that conditions in this area are uncertain and provides recommendations for additional wells and sampling.

The extent of the PCP shown on Figure 4-1 was prepared using a general approach that takes into consideration not only current data, but historical information as well as available information on the source. There is no indication that there is a separate source of PCP within the residential areas represented by well RW-1 and RW-12. It is reasonable to assume that elevated PCP levels in these wells originated from the source of PCP shown on Figure 4-1 and therefore that the plume is connected. In addition, historical information indicates that PCP has been detected in at least one residential well in that area, which resulted in the replacement of that well.

The depiction of the PCP extent relied on the detected concentrations and used generalized groundwater flow directions as a guide. As discussed in the response to previous comments, the flow direction of the groundwater is considered to be reflective of site conditions. Although the presence of shallow clay units complicates the flow patterns at the Reliance and Yale facilities, the provided interpretation of the PCP extent is considered conservatively large and reasonable. In addition, at the levels detected in this northeast lobe, it is expected that there will be certain data points within a contaminated area that will not show detections as a result of varying geological conditions as well as hydrogeological conditions at the time of sampling. However, this does not support a finding that the PCP detections in wells RW-1 and RW-12 are isolated plumes generated from a separate source.

Based on monthly water level measurements collected by DEQ, it appears that at times of high water (approximately May) the influx of water causes the groundwater flow to change direction so that it is flowing in a more northeasterly direction**.** This change in flow direction does not appear to last long, and eventually the groundwater flow returns to its general west to east direction. However, this may explain why there have been detections of contaminants related to the KRY Site detected in the residential wells. Groundwater samples were collected from residential wells on a quarterly basis and DEQ intends to require continued sampling of those wells semi-annually. As new information becomes available, the figure will be revised accordingly.

9. *Figures 4-1 and 4-3. Groundwater concentrations for benzene and PCP are higher in well KPT-18 than KPT-17. The opposite was found in November 2005. Is there any chance the samples are switched? Well KPT-18 is double-cased and screened in a clay unit well below the visual LNAPL impacts in KPT-17 and therefore would not be expected to have higher concentrations of petroleum hydrocarbons or PCP.*

Response: The difference in benzene and PCP concentrations measured in wells KPT-17 and KPT-18 is not large (0.5U and 1.5 ug/L benzene and 0.1U and 0.35 ug/L PCP, respectively), and all detections are below water quality standards. Additional sampling of these wells in the future will help evaluate consistency in the results.

10. *Figure 4-1. The plume extent shown on the northeast corner of KPT includes a qualified result (J-value at KPT-13) that is below the method detection limit. The plume extent should not be extended from KPT-13 to KPT-14. Both plumes show increasing concentrations in the downgradient direction (moving away from the KRY) area. Is there potential PCP cross-contamination through well development or groundwater sampling equipment that was decontaminated and used amongst the well network?*

Response: J-flagged data is often used in showing the extent of contamination. Data is J-flagged to show that it is estimated, but it is a positive detection nonetheless. Therefore, it is appropriate to extend the plume from KPT-13 to KPT-14, as both are deep wells with positive detections of PCP. As mentioned previously, DEQ's consultants took great care to prevent cross-contamination of wells and/or samples. However, additional sampling of these wells in the future will help evaluate consistency in the results.

11. Figure 4-2. Dioxins and Furans in Groundwater. The dissolved phase plume extent includes wells with no data to justify extent (KPT-4, -5, KRY-134 A, GW-5, KPT-16). The plume extent should be modified to include the data set that defines it.

Response: The plume extent includes areas where contamination exists. In some cases there is a non-detect or U-flagged well surrounded by wells with detectable concentrations. In these situations, it is entirely appropriate to include the non-detect wells in the plume, as one would not want to ignore data showing the extent of the plume or reflect that there were different plumes due to one well in an area having no detectable contamination. Additionally, KPT-4, GW-5, and KPT-16 are routinely sampled by BNSF/RETEC for dioxins. While the RI did not include sampling of these wells for dioxins, the data has been interpreted based on knowledge that BNSF/RETEC sampling events routinely detect dioxins above background levels in these wells. Therefore, it is appropriate to include these wells and others in the direct vicinity inside of the plume boundary.

12. Figures 4-3, 4-4, and 4-5. The legend on these figure notes that the concentrations are in micrograms per Liter (parts per million), this should be changed to (parts per billion).

Response: The legend on these figures states the following: "NOTES: All results in Micrograms per Liter. (Parts Per Billion)." Micrograms per liter (ug/L) is the same as parts per billion and groundwater concentrations are typically measured in parts per billion. No change is necessary as a result of this comment.

13. Figure 4-4. Trimethylbenzene Extent. Same comment as above, the plume extent area includes wells with non-detect data. The data set does not support the interpreted plume extent.

Response: Please see previous responses to comments on this issue (for other compounds).

14. Figure 4-5. C9-C10 aromatics. The defined extent includes non-detect data.

Response: Please see previous responses to comments on this issue (for other compounds).

15. Figure 4-11A. PCP Subsurface Soil Results. Although soil depth intervals are provided on the figure, it is not clear whether samples were collected from the vadose or saturated zones without conferring with the well logs. This is important in determining migration pathways (e.g., groundwater pathway or vertical infiltration in the soil column) and should be illustrated on the figure.

Response: DEQ agrees that knowledge of where contamination is located throughout the subsurface soils is important in determining migration pathways, and believes that the figures in the RI are adequate to make those types of inferences. However, as referenced in the comment, the information about presence of the saturated zone and/or the vadose zone is present in the well logs, which are included in the RI. Additionally, the text of the RI specifies that groundwater is generally encountered somewhere around 20 feet below ground surface, which gives a good indication of which samples may have been collected from the saturated zone versus the vadose zone. DEQ does not feel it is necessary to revise these figures given that the information is easily accessible elsewhere in the document.

16. *Figure 4-11A. Subsurface soil sampling shows PCP on Reliance property. Is there an understanding about the source of the PCP? At what depths was it found?*

Response: PCP has been detected in a small number of subsurface soil samples collected from the Reliance facility by DEQ's consultants and other parties, which is clearly reflected on the figure in question. DEQ understands the potential source of PCP to be the storage of treated poles on the Reliance facility. For the most part, the detected concentrations in the shallower surface soil are much lower than those detected in the deeper (smear zone) samples. Additionally, the higher concentrations exist at the extreme southern portion of the Reliance facility, in the general vicinity of the groundwater plume emanating from the KPT facility. The depths for all subsurface soil samples are provided on the figure.

TABLE COMMENTS

1. *Table 2-1. What was the purpose of including formaldehyde and bromide to the standard analyte list?*

Response: As stated in Section 2.4 of the *Final Remedial Investigation Work Plan* (dated March 2006), in addition to the standard suite of analytes, selected samples were also analyzed for bromate and formaldehyde. Section 2.4.1 of the *Final Remedial Investigation Work Plan* (dated March 2006) states the following: "Groundwater upgradient to, and in the vicinity of the existing ozonation system will be analyzed for indictor analytes and breakdown products of PCP … to evaluate whether the existing ozonation system may currently be generating toxic byproducts…. Toxic byproducts of the oxidation of PCP include aldehydes (specifically, formaldehyde), ketones (specifically, acetone), and bromate. Additional analysis for these classes of compounds in groundwater will be performed." These compounds and the reasoning for including them in the analyte list is also discussed on page ES-6 of the RI Executive Summary, and on page 4-9 in Section 4.2.6 of the RI.

2. *Table 3-2. The specific conductivity for KRY-128A is over two orders of magnitude higher than other wells. Is this a typo?*

Response: This conductivity reading is a typographical error and will be corrected in the Final RI Report.

3. *Table 3-4. The calculation of vertical gradients in well pairs 125 A/B and 129 A/B should be reconsidered as these wells are likely screened in separate hydrostratigraphic units and are not hydraulically connected.*

Response: The calculated vertical gradients are not used to infer a vertical movement of groundwater and/or contamination between shallow and deeper zones of the aquifer, but rather point to a complexity of flow conditions where the shallow clay units are present. For simplicity, the aquifer is considered as unconfined everywhere. However, in less than 20% of the KRY Site area, the aquifer may behave as semi-confined or confined.

4. *Table 3-8. The October 2006 fluid level data shows 6 wells with a first time NAPL thickness of 0.01 feet. This includes a deep well (MW-118B) that based on site conditions would not be expected to contain NAPL. Are these measurements false positives related to films in the wells? Based on our experience, it is difficult to record NAPL thicknesses to 0.01 feet.*

Response: DEQ collected static water levels and NAPL thickness measurements on all wells associated with the KRY Site on a monthly basis from August 2006 through July 2007. Similar NAPL thicknesses (0.01 feet) were recorded at various times in various wells throughout the winter. The October 2006 data does not provide any specifics for whether or not there was evidence of product, but subsequent months have all shown that these wells do not exhibit any visible or odiferous signs of NAPL, despite these 0.01 feet NAPL thickness readings. DEQ believes it may have something to do with ice crystals associated with the probe. DEQ does not believe these wells have NAPL associated with them, with the possible exception of GWRR-3, as it has had a strong odor at various times in the past and is in the vicinity of other wells with measurable product present.

5. *Tables 4-1 through 4-5. These tables do not support nature or extent in any way, just statistics. At a minimum it would be useful to know the sample ID where the maximum concentration was detected and which samples comprised the background data set.*

   It would be useful for the RI to include summary tables for the established COPCs that include sample IDs, locations, and depths for each media along with relevant screening levels.

Response: These tables provide the list of detected compounds for each media, the minimum and maximum detections, comparison of these detections to applicable screening levels, and the statistics associated with each of the detected compounds. These tables provide a large amount of information, including that necessary for screening COPCs, which are clearly depicted within the tables. Information regarding the individual samples and their detections are provided on the data summary tables in Appendix G and referred to throughout the text. The samples used as the background samples are discussed in the text. The data associated with these background samples are provided in the data summary tables in Appendix G, as well as on the tables referred to in this comment. There will be no changes made to the tables as a result of these comments, as the information requested by the comments is already provided and discussed within the document and is relatively easy to access.

6. *Table 4-6. The physical and chemical properties listed are not site-specific and this should be noted on the table.*

Response: DEQ understands that weathering and other similar processes can somewhat change the physical and chemical properties of compounds. However, as a general rule, the properties listed in the table are specific to the compound and are not generally considered to be site-specific, no matter what the circumstances. DEQ will add the term "General" to the beginning of the title of the table to reflect this, but no other changes will be made in response to this comment.

APPENDIX G COMMENTS

1. *The calculations for TCDD TEQ for surface water and sediment data do not appear to be correct and should be rechecked and the calculations provided to BNSF. RETEC has been in communication with MDEQ on this issue and it appears that the dioxin TCDD TEQ calculations should be rechecked in the RI.*

Response: DEQ and RETEC have corresponded on this issue and DEQ has determined that the dioxin/furan TEQs for surface water, sediment, and a small number of groundwater and surface soil samples were not calculated correctly. DEQ and its contractor have corrected the problem and had already provided the revised TEQs to RETEC at the time these comments were submitted. The revised TEQs will be included in the Final RI.